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EXAMINER

BOATENG, ALEXIS ASIEDUA

ART UNIT PAPER NUMBER

2838

DATE MAILED: 08/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/717,950

Applicant(s)

NEIL ET AL.

Examiner

Alexis Boateng

Art Unit

2838

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-11 and 13-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-11,13-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This action replaces the previous final action mailed 4/21/06 due to reasons disclosed in the interview summary.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 6, 7, 11, and 15 - 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Yagi (U.S. 6,188,202).

Regarding claims 1 and 11, Yagi discloses a battery charge system for a vehicle, including (Figure 1):

a controller (30) that detects a charging session where a battery (12) in the vehicle is charged by

an external battery charger(14), the controller upon detecting the charging session automatically activating a fan located in the vehicle for cooling the

battery during the charging session(column 2 lines 60 through 62: A cooling fan 16 adapted to cool the battery 12 , and a heater adapted to heat the battery 12

are provided near the battery), wherein the fan continues to cool the battery after the charging session is completed (16) (column 4 line 36 through 40: When the charging operation of the battery 12 is started, the ordinary charge mode or the under charge mode is selected according to the battery temperature Tb1 at the

charge start time which is detected by the battery temperature detector 20.

Column 3 lines 14 through 23: the ECU receives battery temperatures Tb1 and Tb2 from the battery temperature detector 20, and a battery voltage from the battery voltage detector. In response to those signals, the ECU 30 controls the charger 14, the cooling fan, 16 and the heater. Yagi further discloses in column 6 line 58 – column 7 line 6 wherein the battery is in an ordinary charge mode and then the fan is driven at low speed. Yagi further discloses wherein the battery charging session is stopped and the fan is then driven at high speed, thus the fan continues when the charging has stopped.)

Regarding claim 6, Yagi a battery monitor that monitors battery parametric information, the battery monitor or the controller activating the fan when the charging session is detected and the battery monitor controlling the charging session with the battery charger according to a reduced battery temperature provided by the fan and according to a battery charging history profile (Column 3 lines 20 through 22: that in response to those signals, the ECU 30 controls the charger 14, the cooling fan 16, and the heater 18. Column 2 line 14 through 19: that the ECU 30 receives battery temperatures Tb1 and Tb2 from the battery temperature detector 20, and a battery voltage Vb from the battery voltage detector and receives a mode signal Mo (a high-level signal or a low level signal) from a charge mode selecting switch 32 which is adapted to manually select a charging mode. Yagi further discloses in column 3 lines 4 – 13 wherein the battery charging processes are stored in the memory of the ECU.)

Regarding claims 7 and 17, Yagi discloses wherein the controller monitors and stores vehicle operational data and then downloads the stored data to the battery monitor, the battery monitor then sending the data through a cable coupled between the battery monitor and the battery charger to a computer coupled to the battery charger. (Figure 1 items 20, 22: the battery temperature and voltage detector that connects to the ECU. See column 3 lines 7-14: The ECU is constituted by a CPU (central processing unit); a ROM (read only memory) which is a memory in which a system program or an application program for detection of a remaining capacity are stored, a RAM (Random Access Memory) which is a memory and a microcomputer including a timer, and input and output interfaces such as an A/D converter and a D/A converter. Figure 1 items 20, 22, 30, and 14: battery monitors, coupled to battery charger and the CPU.)

Regarding claim 15, Yagi discloses the method including:

monitoring an operating temperature of the battery (figure 1 item 20);
maintaining a usage history for the battery (column 6 lines 13 – 24: battery charging processes stored in RAM);
controlling the charging session and operation of the fan according to the monitored operating temperature and the usage history (figure 7 shows wherein the charging sessions are done respective to the temperature of the battery).

Regarding claims 11, and 15 through 17, claims 11 and 15 through 17 are method steps, which correspond to the apparatus of claim 1, and 6 through 7, respectively. Under the principles of inherency, if a prior art device, in its normal

and usual operation, would necessarily perform the method claimed, then the method claimed will be considered to be anticipated by the prior art device.

When the prior art device is the same as a device described in the specification for carrying out the claimed method, it can be assumed the device will inherently perform the claimed process. In re King, 801 F.2d 1324, 231 USPQ 136 (Fed. Cir 1986)

3. Claims 19 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Conrad (U.S. 2002/0112315).

Regarding claim 19, Conrad discloses in figure 1, paragraph [0060] battery charging system for a vehicle, comprising:

a battery (114) located in the vehicle for powering one or more electric motors used for locomotion or other functions of the vehicle; (paragraph [0049])

a fan (figure 2 item 98; paragraph [0054]) permanently installed in the vehicle and directed toward the battery (figure 5: fan, item 99, directed toward battery item 114); and

a controller (116) automatically activating the fan when the battery charger initiates charging of the battery.

Regarding claim 20, Conrad discloses wherein the battery charging system including switching circuitry in the vehicle that automatically maintains or connects power from the battery charger to the fan and automatically disconnects power from the battery charger from other vehicle electrical

equipment while the battery charger charges the battery (paragraphs [0060] – [0064]; figure 1 item 132: switching circuitry).

4. Claims 24 – 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Takahashi (U.S. 5,781,013).

Regarding claim 24, Takahashi discloses wherein a method for determining power source life including:

generating a vehicle operation profile identifying time periods of vehicle use and non-use (column 14 lines 16 – column 15 lines 63);

monitoring an amount of energy remaining in a power source (column 2 line 28 – 46);

predicting an amount of time the power source can continue to power one or more electric motors according to the vehicle operation profile and the monitored power source life (column 14 lines 16 – column 15 lines 63).

Regarding claim 25, Takahashi discloses wherein monitoring an electric motor energy consumption rate to predict power source performance (column 3 lines 14 – 38).

Regarding claim 26, Takahashi discloses wherein the vehicle operation profile includes monitored electric motor load factors over time (column 6 lines 24 – 41).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 3 rejected under 35 U.S.C. 103(a) as being unpatentable over Yagi (U.S. 6,188,202) in view of Perez (U.S. 6,449,870).

Regarding claim 3, Yagi discloses the claimed invention as defined in claim 1, however does not expressly disclose wherein the system including an interlock switch that connects the battery charger to a fan circuit or connects the battery to the fan circuit during the charging session. Perez et al. discloses in figure 5A switch 51 and 52 for connecting the battery and charger to a fan circuit. Perez further discloses in column 5 lines 50 – 63 wherein the battery is connected to the electric circuit of the fan. At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify the Yagi battery charger system and add a switch as taught by Perez et al. so that the fan can be connected and disconnected to maintain safety in the charger and device.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yagi (U.S. 6,188,202) in view of Perez (U.S. 6,449,870) as applied to claim 3, above and in further view of Watanabe (U.S. 5,982,152).

Regarding claim 4, Yagi does not disclose the invention as claimed. Perez et al. discloses in figure 5A switch 51 and 52 for connecting the battery and charger to a fan circuit. Perez further discloses in column 5 lines 50 – 63 wherein the battery is connected to the electric circuit of the fan. At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify the Yagi

battery charger system and add a switch as taught by Perez et al. so that the fan can be connected and disconnected to maintain safety in the charger and device. Yagi and Perez do not disclose the remainder of the claim wherein the battery is connected to the fan circuit by the switch. Watanabe discloses in figure 1, wherein the switch, item 18, is depressed after charging and connects the fan, item 26, to the battery. At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify the Yagi and Perez system with the Watanabe system so that the battery can be cooled during the discharging session to prevent damage.

8. Claim 5 rejected under 35 U.S.C. 103(a) as being unpatentable over Yagi (U.S. 6,188,202) in view of Perez (U.S. 6,449,870) in further view of Traveis et al. (U.S. 6,329,727).

Regarding claim 5, Neither Yagi nor Perez disclose a filter. Traveis et al. discloses in figure 1, a filter 18 for protecting the fan 27. At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify the device of Yagi and Perez and add a filter as taught by Traveis in order to protect the fan against charge surges.

9. Claims 8 – 10, 16, 18 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yagi (U.S. 6,188,202) in view of Langston (U.S. 6,087, 805).

Regarding claim 8, Yagi discloses the claimed invention as defined in claim 1, however does not expressly disclose wherein the controller predicts an amount of remaining vehicle operating time according to both battery charge information

and vehicle operating parameters. Langston discloses in column 8 lines 50 through 57 that in figure 18, there is shown a module for reading out the status of the battery from the microprocessor 30 and the IR transmitter 34 (Fig 2) having an infrared sensor 430, a series to parallel encoder 432 connected to the sensor 430 for receiving signals and transmitting binary code to the storage register and driver 434 which drives the display units 436 to display a string of power values as determined by the module 432. At the time of invention, it would have been obvious to a person of ordinary skill in the art to implement a controller that predicts the amount of remaining vehicle operating time, according to battery charge information so that the user is properly notified of when the vehicle will shutdown and when to recharge or change the battery.

Regarding claims 9 and 16, Yagi discloses the claimed invention as defined in claim 8, however does not expressly disclose wherein the controller monitors and stores a profile of vehicle operation and adjusts the predicted amount of remaining vehicle operating time according to the vehicle operation profile.

Langston discloses in column 2 lines 25 through 34 that in a preferred embodiment, the charging history and other data may be monitored conveniently with a portable monitor, which either plugs into battery charger or, preferably, receives a transmitted radiant energy coded signal with the data. Langston further discloses that a microprocessor aids in the operation of the battery charger and may also aid in the control of the vehicle. Langston continues to state that it may also provide signals such as trouble signals or the like based on

information received by the microprocessor and in some instances, stored in the microprocessor memory. At the time of invention, it would have been obvious to a person of ordinary skill in the art to implement controllers that monitor and store a profile of vehicle operation and adjusts the predicted amount of remaining operating time for maintenance operations such as determining when the battery should be replaced and controlling watering or changing the electrolyte as recited in column 2 lines 23 through 25.

Regarding claims 10 and 21, Yagi discloses the claimed invention as defined in claim 9, however does not expressly disclose wherein the controller predicts a duration of an upcoming vehicle operating session, predicts whether or not the battery has enough charge to operate the vehicle for the predicted duration, and displays results of the predictions. Langston discloses in column 2 lines 7 through 9 that the battery charger control circuit records ampere hours removed from the battery and ampere hours of energy applied to the battery to maintain a long-term record. Langston further discloses in column 2 lines 15 through 20 that the measured energy removed and supplied may determine the termination point for the charge cycle within a predetermined range of energy being removed during a charging cycle, but on the other hand, a circuit which determines the cutoff time based on the rate of change of charging current may be used. At the time of invention, it would have been obvious to a person of ordinary skill in the art to construct the controller so that it predicts whether or not the battery has enough charge to operate the vehicle for the predicted duration, and display the

results of the prediction so that it can provide an appropriate charging current rate or pattern to maintain the life of the battery and to control power applied to the battery during operation of the vehicle.

Regarding claim 18, claim 18 is essentially a duplicate of claims 8, 9, and 10.

Applicant is advised that should claims 8, 9 and 10 be found allowable, claim 18 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof.

When two claims in an application are duplicates or else are so close in content that they both cover the same thing despite a slight difference in wording, it is proper after allowing one claim to object the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03 (k).

10. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yagi (U.S. 6,188,202) in view of Kadouchi (U.S. 5,652,500).

Regarding claim 13, Yagi discloses the invention as defined in claim 11, however does not expressly disclose automatically directing energy from the battery charger to the fan and disconnecting other electrical equipment in the vehicle from the battery when the charging session is detected. Kadouchi discloses in column 4 lines 57 through 61 that under a normal running state, the switch 5 is closed so that a current is supplied to the load. Kadouchi further discloses that during a charge the switch 5 is opened to isolate the load from the battery pack, and a DC charge voltage applied to the battery pack by the charge apparatus 3. At the time of invention, it would have been obvious to a person of ordinary skill in the art to direct energy from the battery charger to the fan and

disconnecting other electrical equipment in the vehicle from the battery when the charging session is detected so that charging time is shortened and charging cost is decreased.

11. Claim 14 rejected under 35 U.S.C. 103(a) as being unpatentable over Yagi (U.S. 6,188,202) in view of Kadouchi (U.S. 5,652,500) in view of Langston (U.S. 6,087,805).

Regarding claim 14, Yagi and Kadouchi disclose the claimed invention as defined in claim 13, however does not expressly disclose connecting the battery charger to the fan during the charging session, disconnecting the battery charger from the fan at the completion of the charging session, and connecting the battery to the fan at the completion of the charging session to remove residual heat from the battery after the battery charger has been shut-off. Kadouchi discloses in column 4 lines 57 through 61 that under a normal running state, the switch 5 is closed so that a current is supplied to the load. Kadouchi further discloses that during a charge the switch 5 is opened to isolate the load from the battery pack, and a DC charge voltage applied to the battery pack by the charge apparatus 3. Kadouchi further discloses in column 1 line 67 through column 2 line 5 that air introduced into the container 11 by an intake fan 12 is exhausted to the outside of the container 11 by an exhaust fan 13 in such a manner that air passes through gaps between cells and the modules inside the battery pack. In this way, the battery pack 1 is forcedly cooled. At the time of invention, it would have been obvious to a person of ordinary skill in the art to connect the battery charger to the fan during the charging session, and disconnect the battery

charger from the fan at the completion of the charging session and connect the battery to the fan to remove residual heat so that the battery continues to be cooled off after it has been fully charged so that its life is preserved.

12. Claims 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yagi (U.S. 6,188,202) in view of Motsenbocker (U.S. 2004/0090195).

Regarding claim 22, Yagi does not disclose the invention as claimed.

Motsenbocker discloses in paragraph [0032] wherein an impedance is measured across one or more electric motors. At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify the Yagi system with the Motsenbocker system so that the speed of the vehicle may be determined.

Regarding claim 23, Yagi discloses in figure 1 and in column 3 lines 4 – 14 wherein remaining amount of charge in the battery is monitored and stored. Yagi discloses the invention as previously claimed, but does not disclose the remainder. Motsenbocker discloses in figure 17 and in paragraph [0032] wherein the time the battery can operate vehicle is predicted in regards to remaining charge and measured impedance. At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify the Yagi system with the Motsenbocker system so that a more accurate measure of time can be predicted from the impedance and remaining charge of the battery.

13. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi (U.S. 5,781,013) in view of Lake (U.S. 6,138,466).

Regarding claim 27, Takahashi does not disclose the invention as claimed.

Lake discloses in columns 9 line 66 – column 70 line 14, wherein ambient temperature is measured. At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify the Takahashi system with the Lake system so that the battery's temperature can be properly regulated based on the ambient temperature.

14. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi (U.S. 5,781,013) in view of Motsenbocker (U.S. 2004/0090195).

Regarding claim 28, Takahashi does not disclose the invention as claimed.

Motsenbocker discloses in paragraph [0247] wherein the motor controls a steering system. At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify the Takahashi system with the Motsenbocker system so that vehicle's components can be easily used by the driver.

15. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi (U.S. 5,781,013) in view of Wruck (U.S. 2002/0026252).

Regarding claim 29, Takahashi does not disclose the invention as claimed.

Wruck discloses in paragraph [0069] wherein vehicle specifics are located in a table for the user to look up and use. At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify the Takahashi system with the Wruck system so that vehicle can be operated properly according to its specific algorithm.

Response to Arguments

16. Applicant's arguments filed 1/13/06 have been fully considered but they are not persuasive. **Regarding claims 1, 11, 13, and 14**, the applicant argues that the fan in the Yagi system does not start automatically and does not teach the fan continuing to blow on the battery after the charging session is completed and instead the fan stops blowing at the box designated as END in figure 7. Yagi discloses in column 6 line 58 – column 7 line 6 wherein the battery is in an ordinary charge mode and then the fan is driven at low speed. Yagi further discloses wherein the battery charging session is stopped and the fan is then driven at a high speed, thus the fan continues when the charging has stopped.

17. **Regarding claim 3**, the applicant argues that the Perez reference does not disclose connecting a battery charger to a fan circuit. The applicant continues to argue that the switches do not disclose a means for connecting a battery charger to a fan circuit, but allow the switches S1 and S2 allow the fan to be operated alone or in tandem with the heater. When the battery is being charged, the switch may be depressed which allows the charger to be connected to the fan.

18. **Regarding claim 5**, the applicant argues that Traveis does not disclose a functioning of the filter to filter out the charge surges. The applicant further argues that compensating for a constant high voltage VIN from a power supply does not make obvious a filter that filters large surges in a battery charge system that connects a fan to a battery or a battery charger. Traveis discloses in column 2 lines 25 – 34 wherein the

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supply voltage is substantially in excess of the maximum operating voltage, which can be a high voltage relative to the system. Traveis further discloses in column 2 lines 52 – 63 wherein the V_{in} is a peak voltage converted by the LC filter.

19. **Regarding claims 8, 9, and 10**, the applicant argues that the claim element of predicting a vehicle operating time is not found in or suggested by any of the references. The applicant further argues that the references relate to battery life and do not teach or disclose predicting whether or not the battery has enough charge to operate the vehicle for the predicted duration and displaying the results. The fact that battery's life is displayed for the electric vehicle provides a time that the vehicle may be operated, because the vehicle is run by the battery.

20. Applicant's arguments, see page 11, filed 1/13/06 with respect to the rejection(s) of claim(s) 19 - 20 under Kadouchi (U.S. 5,652,500) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Conrad (U.S. 2002/0112315). The vacuum disclosed in the Kadouchi system is considered to be a vehicle because it has wheels and transports materials, as defined in Random House College dictionary 1980.

Conclusion

21. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexis Boateng whose telephone number is (571) 272-5979. The examiner can normally be reached on 8:30 am - 6:00 pm, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Karl Easthom can be reached on 571-272-1989. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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AB

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